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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	10.03.18
Type of Mix	:	BC
Sample I/D	:	BC3

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	920
2. Weight of Mixture after extraction, g	897	869
3. Weight of Bitumen	53	51
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.50
6. Weight of fines, g	2.10	2.50
7. Weight of Bitumen & fines	55.10	53.50
8. Bitumen content in %	5.80	5.82
9. Average Bitumen content in %	**5.81**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	10.03.18
		Date of testing:	10.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	897.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	92	92.0	10.26	89.74	79 - 100
9.50	114	206.0	22.97	77.03	71 - 95
4.75	122	328.0	36.57	63.43	53 - 71
2.360	130	458.0	51.06	48.94	42 - 58
1.180	112	570.0	63.55	36.45	34 - 48
0.600	68	638.0	71.13	28.87	26 - 38
0.300	77	715.0	79.71	20.29	18 - 28
0.150	50	765.0	85.28	14.72	12 - 20
0.075	72	837.0	93.31	6.69	4 - 10
Pan	60.0				
Total	897.0				

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

Consultant's Representative

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	10.03.18
Type of Mix	:	Tack coat
Sample I/D	:	1

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.810	0.820
Final weight of plate after application of tack Coat (c)	Kg	0.833	0.843
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.250
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Consultant's Representative

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	10.03.18
Type of Mix	:	Tack coat
Sample I/D	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.790	0.815
Final weight of plate after application of tack Coat (c)	Kg	0.813	0.838
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.250
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	10.03.18
Type of Mix	:	Tack Coat
Sample I/D	:	3

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.090	0.090
Initial Wt of empty Plate (b)	Kg	0.752	0.795
Final weight of plate after application of tack Coat (c)	Kg	0.775	0.818
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.250
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 to 0.30 Kg/sq.m**	

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Name of Work	:	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	13.03.18
Type of Mix	:	BC
Sample I/D	:	BC2

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	13.03.18
		Date of testing:	13.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	98	98.0	8.17	91.83	79 - 100
9.50	116	214.0	17.83	82.17	71 - 95
4.75	160	374.0	31.17	68.83	53 - 71
2.360	182	556.0	46.33	53.67	42 - 58
1.180	120	676.0	56.33	43.67	34 - 48
0.600	154	830.0	69.17	30.83	26 - 38
0.300	150	980.0	81.67	18.33	18 - 28
0.150	52	1032.0	86.00	14.00	12 - 20
0.075	86	1118.0	93.17	6.83	4 - 10
Pan	82.0				
Total	1200.0				

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Name of Work	:	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	13.03.18
Type of Mix	:	BC
Sample I/D	:	BC2

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	13.03.18
		Date of testing:	13.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	98	98.0	8.17	91.83	79 - 100
9.50	124	222.0	18.50	81.50	71 - 95
4.75	130	352.0	29.33	70.67	53 - 71
2.360	178	530.0	44.17	55.83	42 - 58
1.180	170	700.0	58.33	41.67	34 - 48
0.600	126	826.0	68.83	31.17	26 - 38
0.300	114	940.0	78.33	21.67	18 - 28
0.150	100	1040.0	86.67	13.33	12 - 20
0.075	70	1110.0	92.50	7.50	4 - 10
Pan	90.0				
Total	1200.0				

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Name of Work	:	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	13.03.18
Type of Mix	:	BC
Sample I/D	:	BC2

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	13.03.18
		Date of testing:.	13.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	100	100.0	8.33	91.67	79 - 100
9.50	130	230.0	19.17	80.83	71 - 95
4.75	162	392.0	32.67	67.33	53 - 71
2.360	150	542.0	45.17	54.83	42 - 58
1.180	130	672.0	56.00	44.00	34 - 48
0.600	124	796.0	66.33	33.67	26 - 38
0.300	142	938.0	78.17	21.83	18 - 28
0.150	100	1038.0	86.50	13.50	12 - 20
0.075	68	1106.0	92.17	7.83	4 - 10
Pan	94.0				
Total	1200.0				

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant	**M/s Tejus Consultants**
Contractor	**M/S Ram and Company, Engineers & Contractors**

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	BC	**Proposed Use**	**BC**
Sample Location	At plant	**Date of Sampling**	**13.03.18**
		Date of Testing	**13.03.18**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	966	80	886	74
16.0	12.5	1152	106	1046	112
12.5	10.0	656	82	574	52
10.0	6.3	550	66	484	76
Total		**3324**	**334**	**2990**	**314**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.05
Elongation Index(%):	10.50
Combined FI+EL (%)	20.55

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Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant	**M/s Tejus Consultants**
Contractor	**M/S Ram and Company, Engineers & Contractors**

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	BC	**Date of Sampling**	**13.03.18**
Sample Location	At plant	**Date of Testing**	**13.03.18**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	376.00	368.00	378.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	294.00	290.00	294.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	82.00	78.00	84.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	21.81	21.20	22.22	
5	Average Aggregate impact value	(%)		21.74		Max - 30 %

Remarks : Satisfactory / Not Satisfactory

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	15.03.18
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	924	930
2. Weight of Mixture after extraction, g	873	878
3. Weight of Bitumen	51	52
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.70	4.00
6. Weight of fines, g	2.70	2.00
7. Weight of Bitumen & fines	53.70	54.00
8. Bitumen content in %	5.81	5.81
9. Average Bitumen content in %	**5.81**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	15.03.18
		Date of testing:	15.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	873.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	92	92.0	10.54	89.46	79 - 100
9.50	118	210.0	24.05	75.95	71 - 95
4.75	125	335.0	38.37	61.63	53 - 71
2.360	112	447.0	51.20	48.80	42 - 58
1.180	100	547.0	62.66	37.34	34 - 48
0.600	78	625.0	71.59	28.41	26 - 38
0.300	74	699.0	80.07	19.93	18 - 28
0.150	60	759.0	86.94	13.06	12 - 20
0.075	65	824.0	94.39	5.61	4 - 10
Pan	49.0				
Total	873.0				

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Bangalore - 97

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	15.03.18
Type of Mix	:	BC
Sample I/D	:	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	940	950
2. Weight of Mixture after extraction, g	887	897
3. Weight of Bitumen	53	53
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	3.60	4.10
6. Weight of fines, g	1.60	2.10
7. Weight of Bitumen & fines	54.60	55.10
8. Bitumen content in %	5.81	5.80
9. Average Bitumen content in %	**5.80**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	15.03.18
		Date of testing:	15.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	887.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	96	96.0	10.82	89.18	79 - 100
9.50	114	210.0	23.68	76.32	71 - 95
4.75	130	340.0	38.33	61.67	53 - 71
2.360	118	458.0	51.63	48.37	42 - 58
1.180	90	548.0	61.78	38.22	34 - 48
0.600	88	636.0	71.70	28.30	26 - 38
0.300	60	696.0	78.47	21.53	18 - 28
0.150	57	753.0	84.89	15.11	12 - 20
0.075	70	823.0	92.78	7.22	4 - 10
Pan	64.0				
Total	887.0				

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX		
Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	15.03.18
Type of Mix	:	BC
Sample I/D	:	BC3

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	960
2. Weight of Mixture after extraction, g	897	906
3. Weight of Bitumen	53	54
4. Weight of filter paper before extraction, g	2.00	2.15
5. Weight of filter paper after extraction, g	4.10	4.00
6. Weight of fines, g	2.10	1.85
7. Weight of Bitumen & fines	55.10	55.85
8. Bitumen content in %	5.80	5.82
9. Average Bitumen content in %	**5.81**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	15.03.18
		Date of testing:	15.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	897.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	92	92.0	10.26	89.74	79 - 100
9.50	94	186.0	20.74	79.26	71 - 95
4.75	116	302.0	33.67	66.33	53 - 71
2.360	128	430.0	47.94	52.06	42 - 58
1.180	110	540.0	60.20	39.80	34 - 48
0.600	112	652.0	72.69	27.31	26 - 38
0.300	72	724.0	80.71	19.29	18 - 28
0.150	64	788.0	87.85	12.15	12 - 20
0.075	72	860.0	95.88	4.12	4 - 10
Pan	37.0				
Total	897.0				

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BBMP, Bangalore - 97

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	15.03.18
Type of Mix	:	Tack coat
Sample I/D	:	1

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	**Unit**	**Test No**	
		1	**2**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.926	0.930
Final weight of plate after application of tack Coat (c)	Kg	0.949	0.953
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.250
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	15.03.18
Type of Mix	:	Tack coat
Sample I/D	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	**Unit**	**Test No**	
		1	**2**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.850	0.863
Final weight of plate after application of tack Coat (c)	Kg	0.873	0.886
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.250
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	15.03.18
Type of Mix	:	Tack Coat
Sample I/D	:	3

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.090	0.090
Initial Wt of empty Plate (b)	Kg	0.780	0.790
Final weight of plate after application of tack Coat (c)	Kg	0.803	0.813
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.250
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 to 0.30 Kg/sq.m**	

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Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

Consultant's Representative

Name of Work	:	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	16.03.18
Type of Mix	:	BC
Sample I/D	:	BC3

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	16.03.18
		Date of testing:	16.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	102	102.0	8.50	91.50	79 - 100
9.50	134	236.0	19.67	80.33	71 - 95
4.75	220	456.0	38.00	62.00	53 - 71
2.360	136	592.0	49.33	50.67	42 - 58
1.180	128	720.0	60.00	40.00	34 - 48
0.600	122	842.0	70.17	29.83	26 - 38
0.300	121	963.0	80.25	19.75	18 - 28
0.150	52	1015.0	84.58	15.42	12 - 20
0.075	72	1087.0	90.58	9.42	4 - 10
Pan	113.0				
Total	1200.0				

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Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore-97

Consultant's Representative

Name of Work	:	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION**
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors.
Date of Testing	:	16.03.18
Type of Mix	:	BC
Sample I/D	:	BC2

GRADATION FOR BC
(As per MORT&H 500-18,Grading-2)

Sample Location:	At plant	Date of Sampling:	16.03.18
		Date of testing:	16.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	1200.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	100	100.0	8.33	91.67	79 - 100
9.50	98	198.0	16.50	83.50	71 - 95
4.75	212	410.0	34.17	65.83	53 - 71
2.360	158	568.0	47.33	52.67	42 - 58
1.180	162	730.0	60.83	39.17	34 - 48
0.600	136	866.0	72.17	27.83	26 - 38
0.300	92	958.0	79.83	20.17	18 - 28
0.150	78	1036.0	86.33	13.67	12 - 20
0.075	100	1136.0	94.67	5.33	4 - 10
Pan	64.0				
Total	1200.0				

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant	**M/s Tejus Consultants**
Contractor	**M/S Ram and Company, Engineers & Contractors**

FLAKINESS AND ELONGATION INDICES (IS 2386, PART 1)

Type of Material	BC	**Proposed Use**	**BC**
Sample Location	At plant	**Date of Sampling**	**16.03.18**
		Date of Testing	**16.03.18**

Size of aggregate		**Flakiness Index**		**Elongation Index**	
Passing through IS sieve, mm	**Retained on IS sieve, mm**	**Total wt. of aggregate retained on sieves (A) gms.**	**Wt. of aggregate passing from Flakiness gauge (B) gms**	**Wt. of aggregate retained on Flakiness gauge (C) gms**	**Wt. of aggregate retained on Elongation gauge after retained on Flakiness gauge(D)gms**
63.0	50.0	0	0	0	0
50.0	40.0	0	0	0	0
40.0	31.5	0	0	0	0
31.5	25.0	0	0	0	0
25.0	20.0	0	0	0	0
20.0	16.0	852	90	762	78
16.0	12.5	1220	102	1118	102
12.5	10.0	652	76	576	60
10.0	6.3	658	74	584	72
Total		**3382**	**342**	**3040**	**312**

Note: Minimum 200 Pcs should be taken on each fraction of test

Flakiness Index(%):	10.11
Elongation Index(%):	10.26
Combined FI+EL (%)	20.38

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Project	**COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.**
Client	**BRUHAT BANGALORE MAHANAGARA PALIKE**
Consultant	**M/s Tejus Consultants**
Contractor	**M/S Ram and Company, Engineers & Contractors**

AGGREGATE IMPACT VALUE (IS: 2386 Part - 4)

Proposed Use	BC	**Date of Sampling**	**16.03.18**
Sample Location	At plant	**Date of Testing**	**16.03.18**

Sl. No.	Description		Test No. 1	Test No. 2	Test No. 3	Spec Limit (%)
1	Wt. of stone pieces (dry) passing IS Sieve 12.5mm but retained in IS sieve 10mm (gm)	(Wa)	348.00	336.00	362.00	
2	Wt. of the fraction retained in IS sieve 2.36mm after the impact test (gm)	(Wb)	270.00	260.00	276.00	
3	Wt. of the fraction passed in IS sieve 2.36mm after the impact test (gm)	(Wc)	78.00	76.00	86.00	
4	Aggregate Impact Value (%)	(Wc/Wa)*100	22.41	22.62	23.76	
5	Average Aggregate impact value	(%)	22.93			Max - 30 %

Remarks : Satisfactory / Not Satisfactory

Consultant's Representative

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX		
Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19.03.18
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	**Trail 1**	**Trail 2**
1. Weight of Mixture before extraction, g	928	934
2. Weight of Mixture after extraction, g	876	882
3. Weight of Bitumen	52	52
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.00	4.40
6. Weight of fines, g	2.00	2.40
7. Weight of Bitumen & fines	54.00	54.40
8. Bitumen content in %	5.82	5.82
9. Average Bitumen content in %	**5.82**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	19.03.18
		Date of testing:	19.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	876.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % 'of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	89	89.0	10.16	89.84	79 - 100
9.50	112	201.0	22.95	77.05	71 - 95
4.75	90	291.0	33.22	66.78	53 - 71
2.360	130	421.0	48.06	51.94	42 - 58
1.180	124	545.0	62.21	37.79	34 - 48
0.600	76	621.0	70.89	29.11	26 - 38
0.300	70	691.0	78.88	21.12	18 - 28
0.150	46	737.0	84.13	15.87	12 - 20
0.075	90	827.0	94.41	5.59	4 - 10
Pan	49.0				
Total	876.0				

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Consultant's Representative

Assistant Executive Engineer
Vidyaranyapura Sub Division
Bangalore - 97

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19.03.18
Type of Mix	:	BC
Sample I/D	:	BC2

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	965
2. Weight of Mixture after extraction, g	897	911
3. Weight of Bitumen	53	54
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.20
6. Weight of fines, g	2.10	2.20
7. Weight of Bitumen & fines	55.10	56.20
8. Bitumen content in %	5.80	5.82
9. Average Bitumen content in %	**5.81**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	19.03.18
		Date of testing:	19.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	897.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	86	86.0	9.59	90.41	79 - 100
9.50	133	219.0	24.41	75.59	71 - 95
4.75	125	344.0	38.35	61.65	53 - 71
2.360	118	462.0	51.51	48.49	42 - 58
1.180	98	560.0	62.43	37.57	34 - 48
0.600	70	630.0	70.23	29.77	26 - 38
0.300	68	698.0	77.81	22.19	18 - 28
0.150	60	758.0	84.50	15.50	12 - 20
0.075	58	816.0	90.97	9.03	4 - 10
Pan	81.0				
Total	897.0				

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BBMP, Bangalore - 97

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19.03.18
Type of Mix	:	BC
Sample I/D	:	BC1

DETERMINATION OF BITUMEN CONTENT

Description	Trail 1	Trail 2
1. Weight of Mixture before extraction, g	950	965
2. Weight of Mixture after extraction, g	897	911
3. Weight of Bitumen	53	54
4. Weight of filter paper before extraction, g	2.00	2.00
5. Weight of filter paper after extraction, g	4.10	4.20
6. Weight of fines, g	2.10	2.20
7. Weight of Bitumen & fines	55.10	56.20
8. Bitumen content in %	5.80	5.82
9. Average Bitumen content in %	**5.81**	
10. Minimum Bitumen content in %	**5.80**	

GRADATION FOR BC AFTER EXTRACTION

(As per MORT&H 500-18,Grading-2)

Sample Location:	At site	Date of Sampling:	19.03.18
		Date of testing:	19.03.18
Type of material & Purpose:	BC	Oven Dry Wt.(gms):	897.0

IS Sieve size in mm	Weight retained	Cummulative weight retained (gm)	Cummulative % of retained	Cummulative % of passing	Specification limits
19.00	0	0	0.00	100.00	100.00
13.20	92	92.0	10.26	89.74	79 - 100
9.50	98	190.0	21.18	78.82	71 - 95
4.75	110	300.0	33.44	66.56	53 - 71
2.360	116	416.0	46.38	53.62	42 - 58
1.180	118	534.0	59.53	40.47	34 - 48
0.600	74	608.0	67.78	32.22	26 - 38
0.300	72	680.0	75.81	24.19	18 - 28
0.150	76	756.0	84.28	15.72	12 - 20
0.075	80	836.0	93.20	6.80	4 - 10
Pan	61.0				
Total	897.0				

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Assistant Executive Engineer
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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19.03.18
Type of Mix	:	Tack coat
Sample I/D	:	1

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30.	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.812	0.782
Final weight of plate after application of tack Coat (c)	Kg	0.835	0.805
Weight of tack Coat (d=c-b)	Kg	0.02	0.0225
Rate of spread of tack coat	Kg/sq.m	0.26	0.25
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

Consultant's Representative

Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19.03.18
Type of Mix	:	Tack coat
Sample I/D	:	2

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.812	0.762
Final weight of plate after application of tack Coat (c)	Kg	0.835	0.785
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.230
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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Name of Work	:	COMPREHENSIVE DEVELOPMENT FOR ROADS AND DRAINS IN WARD NO. 9, 10 AND 11 UNDER CMC AND TMC GRANTS, VIDYARANYAPURA SUB-DIVISION, YELAHANKA ZONE, BYATARAYANAPURA DIVISION.
Client	:	BRUHAT BANGALORE MAHANAGARA PALIKE
Consultant	:	M/s Tejus Consultants
Contractor	:	M/S Ram and Company, Engineers & Contractors
Date of Testing	:	19.03.18
Type of Mix	:	Tack Coat
Sample I/D	:	3

DETERMINATION OF RATE OF SPREAD TACK COAT

Determination	**Unit**	**Test No**	
		1	**2**
Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
Area of Plate (a)	Sq.mtr	0.09	0.09
Initial Wt of empty Plate (b)	Kg	0.752	0.758
Final weight of plate after application of tack Coat (c)	Kg	0.775	0.781
Weight of tack Coat (d=c-b)	Kg	0.023	0.023
Rate of spread of tack coat	Kg/sq.m	0.256	0.250
Average	Kg/sq.m	0.253	
Specified Limit	Kg/sq.m	**0.250 Kg/sq.m**	

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